

AMENDMENTS TO THE CLAIMS

Applicant respectfully requests that this listing of claims replace the prior versions of claims in the application.

1. (Currently amended) A method comprising:

- receiving at least two thresholds at a dynamic range controller having an audio signal input, an audio signal output, a power control, and an adaptive threshold control to generate a variable threshold, wherein a first threshold is a maximum power level for short time interval operation and a second threshold is a maximum power level for long time interval operation of an electro acoustic transducer, and the short time interval and the long time interval operations are independently controlled;
- detecting the power of the audio signal input continuously;
- short term controlling the power of the audio signal output wherein the power of the output is reduced to said maximum power level for short time interval operation, if the detected power of said audio signal input exceeds said maximum power level for short time interval operation; [[and]]
- long term controlling the power of the audio signal output wherein the power of the output signal is reduced to said maximum power level for long time interval operation, if the detected power of said audio signal input exceeds said maximum power level for long time interval operation, for a predetermined time period, wherein said long term control overrides said short term control, wherein the variable threshold is continually controlled depending on the differences between the power of the audio signal input and the long term maximum output power level; and
- providing a smooth transition from the maximum power level for short time interval operation to a maximum power level for long time interval operation.

2. (Previously presented) Method according to claim 1, wherein said long term controlling of the power of the signal is performed at a speed depending from the difference in power between said detected input signal and said maximum power level for long time interval

operation.

3. (Currently amended) Method according to claim 1, wherein said two thresholds are received from said electro acoustic transducer.

4. (Previously presented) Method according to claim 1, wherein said long term control comprises a smooth reduction of said output power level.

5. (Previously presented) Method according to claim 1, wherein said long term control comprises a time interval controlled smooth reduction of said output power level.

6. (Previously presented) Method according to claim 1, wherein said short term control comprises an immediate reduction of said output power level.

7. (Previously presented) Method according to claim 1, wherein said power control comprises a digital power control having a digital control range and an analog power control having an analog power control range, wherein said signal volume is controlled analogously at signal levels lower than the control range of said analog control, and said signal power is controlled digitally at signal levels higher than the control range of said digital control, and wherein the power control ranges of said analog and digital controls are not overlapping.

8. (Currently amended) A computer readable medium encoded with a computer program having instructions for carrying out a method of operating a dynamic range control of an audio signal, with an adaptive threshold control for generating a variable threshold, wherein said dynamic range control comprises an audio signal input, an audio signal output, and a range control, the method comprising:

receiving at least two thresholds, wherein a first threshold is a maximum power level for short time interval operation and a second threshold is a maximum power level for

long time interval operation of an electro acoustic transducer, and the short time interval and the long time interval operations are independently controlled;

detecting the power of the audio signal input continuously;

short term controlling the power of the audio signal output wherein the power of the output is reduced to said maximum power level for short time interval operation, if the detected power of said audio signal input exceeds said maximum power level for short time interval operation; [[and]]

long term controlling the power of the audio signal output wherein the power of the output signal is reduced to said maximum power level for long time interval operation, if the detected power of said audio signal input exceeds said maximum power level for long time interval operation, for a predetermined time period, wherein said long term control overrides said short term control wherein the variable threshold is continually controlled depending on the differences between the power of the audio signal input and the long term maximum output power level; and

providing a smooth transition from the maximum power level for short time interval operation to a maximum power level for long time interval operation,

when said computer program is run on an electronic audio device.

9-10. (Canceled)

11. (Currently amended) Dynamic range controller ~~with an adaptive threshold~~ comprising:

an audio signal input,

an audio signal output,

an electro acoustic transducer detection input to continuously detect the power of the audio signal input,

an adaptive threshold control configured to generate a variable threshold,

a power controller, and

at least one input to receive at least two thresholds, wherein a first threshold is a maximum power level for short time interval operation and a second threshold is a

maximum power level for long time interval operation of an electro acoustic transducer, wherein said dynamic range controller is configured to short term control the power of the audio signal output wherein the power of the output is reduced to said maximum power level for short time interval operation, if the detected power of said audio signal input exceeds said maximum power level for short time interval operation, and wherein said dynamic range controller is configured to long term control the power of the audio signal output wherein the power of the output signal is reduced to said maximum power level for long time interval operation, if the detected power of said audio signal input exceeds said maximum power level for long time interval operation for a predetermined time period, wherein said long term control overrides said short term control wherein the variable threshold is continually controlled depending on the differences between the power of the audio signal input and the long term maximum output power level and a smooth transition is provided from the maximum power level for short time interval operation to a maximum power level for long time interval operation.

12. (Previously presented) Dynamic range control according to claim 11, further comprising a soft switch to slowly control the transition of the power of the output signal from being substantially equal to said maximum power level for short time interval operation to at most being substantially equal to said maximum power level for long time interval operation.

13. (Previously presented) Dynamic range control according to claim 11, further comprising a timer element to operate said long term control in a timer controlled way.

14. (Currently amended) Electronic audio device comprising:

a dynamic range controller with an adaptive threshold control configured to generate a variable threshold, including an audio signal input, an audio signal output, a transducer detection input to continuously detect the power of the audio signal input, a power controller, and at least one input to receive at least two thresholds including a maximum power level for short time interval operation and a maximum power level for long time

interval operation of an electro acoustic transducer, wherein the short time interval and the long time interval operations are independently controlled;

a digital signal processor; and

memory including computer program code where the memory and computer program code are configured to, with the digital signal processor, cause the dynamic range controller at least to perform

short term control of the power of the audio signal output wherein the power of the output is reduced to said maximum power level for short time interval operation, if the detected power of said audio signal input exceeds said maximum power level for short time interval operation, and long term control of the power of the audio signal output wherein the power of the output signal is reduced to said maximum power level for long time interval operation, if the detected power of said audio signal input exceeds said maximum power level for long time interval operation for a predetermined time period, wherein said long term control overrides said short term control wherein the variable threshold is continually controlled depending on the differences between the power of the audio signal input and the long term maximum output power level and a smooth transition is provided from the maximum power level for short time interval operation to a maximum power level for long time interval operation.

15. (Previously presented) Electronic audio device according to claim 14, further comprising a digital audio signal source and an analog audio output.

16. (Previously presented) Electronic audio device according to claim 14, wherein the at least one input to receive at least two thresholds is implemented by an integrated circuit implemented in a connector of said electro acoustic transducer.

17. (Previously presented) The electronic audio device of claim 14, wherein the electronic audio device is a cellular telephone.

18. (Previously presented) The dynamic range controller of claim 11, wherein the dynamic range controller is included in a cellular telephone.

19. (Previously presented) The method of claim 1, wherein thresholds are received for more than one electro acoustic transducer.

20. (Currently amended) The method of claim 19, wherein the method is performed for each electro acoustic transducer for which thresholds are received.

21. (Previously presented) The dynamic range controller of claim 11, wherein thresholds are received for more than one electro acoustic transducer.

22. (Currently amended) The electronic audio device of claim 14, wherein said at least two thresholds are retrieved from a database storing thresholds for electro acoustic transducers.